Novell
Internet Storage Name Service

1.0

November 14, 2007

www.novell.com

NOVELL INTERNET STORAGE NAME SERVICE ADMINISTRATION GUIDE

Novell®

Legal Notices

Novell, Inc. makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc. makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export, or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. Please refer to www.novell.com/info/exports/ for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 2007 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

Novell, Inc. has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at http://www.novell.com/company/legal/patents/ and one or more additional patents or pending patent applications in the U.S. and in other countries.

Novell, Inc.
404 Wyman Street, Suite 500
Waltham, MA 02451
U.S.A.
www.novell.com

Online Documentation: To access the online documentation for this and other Novell products, and to get updates, see www.novell.com/documentation.

Novell Trademarks

For Novell Trademarks, see the Novell Trademark and Service Mark list (http://www.novell.com/company/legal/trademarks/tmlist.html).

Third-Party Materials

All third-party trademarks are the property of their respective owners.

Contents

About This Guide 7

1 iSNS for Linux Overview 9

1.1 How iSNS Works . . . 9
1.2 Benefits of iSNS . . . 10
1.3 What's Next . . . 10

2 iSNS for Linux Installation and Setup 11

2.1 Installing iSNS for Linux . . . 11
2.2 Setting Up iSNS . . . 11
2.2.1 Configuring iSCSI Targets and Initiators to Use iSNS . . . 11
2.2.2 Starting iSNS . . . 12
2.2.3 Creating iSNS Discovery Domains . . . 12
2.2.4 Creating iSNS Discovery Domain Sets . . . 13
2.2.5 Adding iSCSI Nodes to a Discovery Domain . . . 13
2.2.6 Adding Discovery Domains to a Discovery Domain Set . . . 13
2.2.7 Setting Up the iSCSI Initiator to Use the iSNS Server . . . 14

A Documentation Updates 15

A.1 November 14, 2007 (Updates) . . . 15
A.1.1 Setting Up iSNS . . . 15

About This Guide

This guide includes information on the Novell® Internet Storage Name Service (iSNS) for Linux*, which provides management of iSCSI target and initiator resources for automatic discovery.

The following topics are included in this documentation:

- Chapter 1, “iSNS for Linux Overview,” on page 9
- Chapter 2, “iSNS for Linux Installation and Setup,” on page 11

Audience

This guide is intended for intended for anyone involved in installing, configuring, and managing iSNS.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation, or go to www.novell.com/documentation/feedback.html and enter your comments there.

Documentation Updates

The latest version of this *iSNS Administration Guide* is available on the SLES 10 Documentation Web site (http://www.novell.com/documentation/sles10/index.html#additional).

Documentation Conventions

In Novell documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

A trademark symbol (®, ™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

iSNS for Linux Overview

1

Storage area networks (SANs) can contain many disk drives that are dispersed across complex networks. This can make device discovery and device ownership difficult. iSCSI initiators must be able to identify storage resources in the SAN and determine whether they have access to them.

Internet Storage Name Service (iSNS) is a standards-based service that is available with SUSE Linux Enterprise Server (SLES) 10 Support Pack 1. iSNS facilitates the automated discovery, management, and configuration of iSCSI devices on a TCP/IP network. iSNS provides intelligent storage discovery and management services comparable to those found in Fibre Channel networks.

This overview contains the following sections:

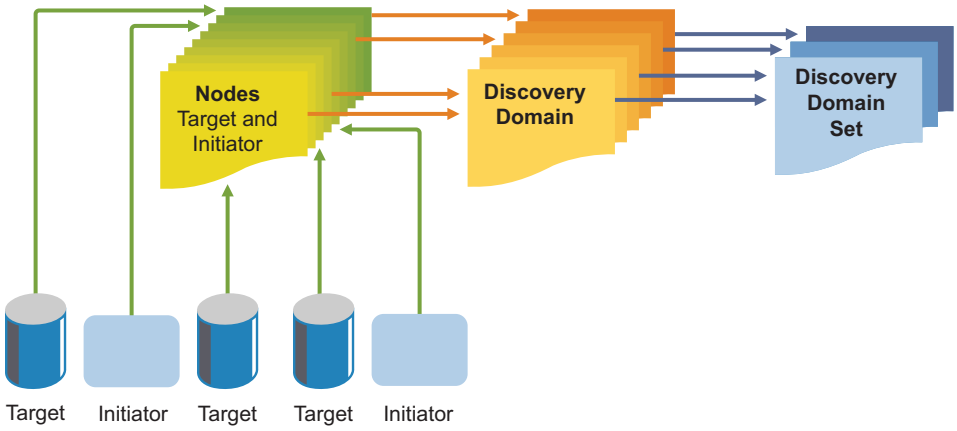
- Section 1.1, “How iSNS Works,” on page 9
- Section 1.2, “Benefits of iSNS,” on page 10
- Section 1.3, “What's Next,” on page 10

1.1 How iSNS Works

For an iSCSI initiator to discover iSCSI targets, it needs to identify which devices in the network are storage resources and what IP addresses it needs to access them. A query to an iSNS server returns a list of iSCSI targets and the IP addresses that the initiator has permission to access.

Using iSNS, you create iSNS discovery domains and discovery domain sets. You then group or organize iSCSI targets and initiators into discovery domains and group the discovery domains into discovery domain sets. By dividing storage nodes into domains, you can limit the login process of each host to the most appropriate subset of targets registered with iSNS, which allows the storage network to scale by reducing the number of unnecessary logins and by limiting the amount of time each host spends establishing login relationships. This lets you control and simplify the number of targets and initiators that have access to each other.

Figure 1-1 *iSNS Discovery Domains and Discovery Domain Sets*



iSNS clients initiate transactions with iSNS servers using the iSNS protocol. They then register device attribute information in a common discovery domain, download information about other

registered clients, and receive asynchronous notification of events that occur in their discovery domain.

iSNS servers respond to iSNS protocol queries and requests made by iSNS clients using the iSNS protocol. iSNS servers initiate iSNS protocol state change notifications and store properly authenticated information submitted by a registration request in an iSNS database.

1.2 Benefits of iSNS

Some of the benefits provided by iSNS for Linux include:

- Provides an information facility for registration, discovery, and management of networked storage assets.
- Integrates with the DNS infrastructure
- Provides access control for registered targets and initiators
- Consolidates registration, discovery, and management of iSCSI storage
- Simplifies storage management implementations.
- Improves scalability compared to other discovery methods.

An example of the benefits iSNS provides can be better understood through the following scenario:

Suppose you have a company that has 100 iSCSI initiators and 100 iSCSI targets. Depending on your configuration, all iSCSI initiators could potentially try to discover and connect to any of the 100 iSCSI targets. This could create a discovery and connection nightmare. By grouping initiators and targets into discovery domains, you can prevent iSCSI initiators in one department from discovering and connecting to the iSCSI targets in another department. The result is that the iSCSI initiators in a specific department can only discover those iSCSI targets that are part of the department's Discovery Domain.

1.3 What's Next

For information on installing and configuring iSNS, see iSNS for Linux Installation and Setup.

iSNS for Linux Installation and Setup

2

iSNS for Linux is included with SLES 10 SP1, but is not installed or configured by default. You must install the iSNS package modules (isns and yast2-isns modules) and configure or set up iSNS to use it.

- Section 2.1, “Installing iSNS for Linux,” on page 11
- Section 2.2, “Setting Up iSNS,” on page 11

2.1 Installing iSNS for Linux

iSNS needs to be installed on only one server on your network. To provide an added level of redundancy, you can configure iSNS to be a cluster resource that can be failed over or migrated to another server on your network.

NOTE: iSNS can be installed on the same server as an iSCSI target or initiator. iSNS does not support configurations where an iSCSI target and initiator are on the same server.

To install iSNS for Linux:

1. Start YaST and select *Software Management*.
2. In the *search* field, enter `isns`.
3. Select both the isns and yast2-isns packages, then click *Accept*.

2.2 Setting Up iSNS

The following sections contain information to help you set up and configure iSNS:

- Section 2.2.1, “Configuring iSCSI Targets and Initiators to Use iSNS,” on page 11
- Section 2.2.2, “Starting iSNS,” on page 12
- Section 2.2.3, “Creating iSNS Discovery Domains,” on page 12
- Section 2.2.4, “Creating iSNS Discovery Domain Sets,” on page 13
- Section 2.2.5, “Adding iSCSI Nodes to a Discovery Domain,” on page 13
- Section 2.2.6, “Adding Discovery Domains to a Discovery Domain Set,” on page 13
- Section 2.2.7, “Setting Up the iSCSI Initiator to Use the iSNS Server,” on page 14

2.2.1 Configuring iSCSI Targets and Initiators to Use iSNS

To configure iSCSI targets and initiators to use iSNS, you must edit the iSCSI configuration file on each iSCSI target and initiator server and add lines that specify the iSNS server address.

Editing the iSCSI Target Configuration File

Edit the `/etc/ietd.conf` file and add the following line:

iSNSServer *isns_server_ip_address*

Replace *isns_server_ip_address* with the IP address of the server where you installed iSNS.

A commented-out section with this line might already exist in the configuration file. If this is the case, you only need to replace the sample IP address with the IP address of your iSNS server.

Editing the iSCSI Initiator Configuration File

Edit the `/etc/iscsi/iscsid.conf` file and add the following lines:

isns.address = *isns_server_ip_address*

isns.port = 3205

Replace *isns_server_ip_address* with the IP address of the server where you installed iSNS.

A commented-out section with these lines should already exist in the configuration file. If this is the case, you only need to replace the sample IP address with the IP address of your iSNS server.

2.2.2 Starting iSNS

iSNS must be started at the server. You can do this by entering `rcisns start` or `/etc/init.d/isns start` at the server console of the server where you install it. You can also use the stop, status, and restart options with iSNS.

iSNS can also be configured to start automatically each time the server is rebooted. To do this

1. Start YaST and under *Network Services*, select *iSNS Server*.
2. With the *Service* tab selected, specify the IP address of your iSNS server, then click *Save Addres*s.
3. In the Service Start section of the screen, select *When Booting* .

   You can also choose to start the iSNS server manually. You must then use the `rcisns start` command to start the service each time the server is restarted.

2.2.3 Creating iSNS Discovery Domains

In order for iSCSI initiators and targets to use the iSNS service, they must belong to a discovery domain. A default discovery domain named default DD is automatically created when you install the iSNS service. The existing iSCSI targets and initiators that have been configured to use iSNS are automatically added to the default discovery domain.

To create a discovery domain:

1. Start YaST and under *Network Services*, select *iSNS Server*.
2. Click the *Discovery Domains* tab, then click the *Add* button.

   You can also select an existing discovery domain and click the *Delete* button to remove that discovery domain.
3. Specify the name of the discovery domain you are creating, then click *OK*.

NOTE: The field is mislabeled as Discovery Domain Set Name. Specifying a name in this field creates a discovery domain, not a discovery domain set.

2.2.4 Creating iSNS Discovery Domain Sets

Discovery domains must belong to a discovery domain set. You can create a discovery domain and add nodes to that discovery domain, but it is not active and the iSNS service does not function unless you add the discovery domain to a discovery domain set. A default discovery domain set named default DDS is automatically created when you install iSNS and the default discovery domain is automatically added to that domain set.

To create a discovery domain set:

1. Start YaST and under *Network Services*, select *iSNS Server*.
2. Click the *Discovery Domains Sets* tab, then click the *Add* button.

   You can also select an existing discovery domain set and click the *Delete* button to remove that discovery domain set.
3. Specify the name of the discovery domain set you are creating, then click *OK*.

2.2.5 Adding iSCSI Nodes to a Discovery Domain

1. Start YaST and under *Network Services*, select *iSNS Server*.
2. Click the *iSCSI Nodes* tab and ensure the iSCSI targets and initiators that you want to use the iSNS service are listed.

   If an iSCSI target or initiator is not listed, you might need to restart the iSCSI service on the node. You can do this by running the `rcopen-iscsi restart` command to restart an initiator or the `rciscsitarget restart` command to restart a target.

   You can select an iSCSI node and click the *Delete* button to remove that node from the iSNS database. This is useful if you are no longer using an iSCSI node or have renamed it.

   The iSCSI node will be automatically added to the list (iSNS database) again when you restart the iSCSI service or reboot the server unless you remove or comment out the iSNS portion of the iSCSI configuration file.
3. Click the *Discovery Domains* tab, select the desired discovery domain, then click the *Display Members* button.
4. Click *Add iSCSI Node*, select the node you want to add to the domain, then click *Add Node*.
5. Repeat Step 4 for as many nodes as you want to add to the discovery domain, then click *Done* when you are finished adding nodes.

   An iSCSI node can belong to more than one discovery domain.

2.2.6 Adding Discovery Domains to a Discovery Domain Set

1. Start YaST and under *Network Services*, select *iSNS Server*.
2. Click the *Discovery Domains Set* tab, select the desired discovery domain set, then click the *Display Members* button.
3. Click *Add Discovery Domain*, select the discovery domain you want to add to the discovery domain set, then click *Add Discovery Domain*.

4 Repeat Step 3 for as many discovery domains as you want to add to the discovery domain set, then click *Done*.

A discovery domain can belong to more than one discovery domain set.

2.2.7 Setting Up the iSCSI Initiator to Use the iSNS Server

Do the following for each iSCSI initiator server that should use the iSNS server:

1 At the console on the iSCSI initiator server, log in as the `root` user, then open a terminal console.

2 At the terminal console prompt, enter

```
iscsiadm --mode discovery --type isns --portal isns_server_ip_addr
```

Replace *isns_server_ip_addr* with the IP address of the iSNS server. For example, if the IP address of the iSNS server is 10.10.10.200, enter

```
iscsiadm --mode discovery --type isns --portal 10.10.10.200
```

Documentation Updates

A

This section contains information about documentation content changes made to the *Novell Internet Storage Name Service Administration Guide* since the initial release of SUSE® Linux Enterprise Server 10 Support Pack 1. If you are an existing user, review the change entries to readily identify modified content. If you are a new user, simply read the guide in its current state.

Refer to the publication date, which appears on the title page, to determine the release date of this guide. For the most recent version of the *Novell Internet Storage Name Service Administration Guide*, see the "Additional Information and Updates" section of the SLES 10 documentation Web site (http://www.novell.com/documentation/sles10/#additional).

In this section, content changes appear in reverse chronological order, according to the publication date. Within a dated entry, changes are grouped and sequenced, according to where they appear in the document itself. Each change entry provides a link to the related topic and a brief description of the change.

This document was updated on the following dates:

- Section A.1, "November 14, 2007 (Updates)," on page 15

A.1 November 14, 2007 (Updates)

Updates were made to the following section. The changes are explained below.

- Section A.1.1, "Setting Up iSNS," on page 15

A.1.1 Setting Up iSNS

The following change was made to this section:

Location	Change
Section 2.2.7, "Setting Up the iSCSI Initiator to Use the iSNS Server," on page 14	This section is new.